

The asexual cycle of *Plasmodium vivax* and *P. falciparum* were grown in vitro in human blood and in red blood cells in Locke's solution. There is evidence that the parasites cannot grow outside the red blood cells. Leucocytes devour the malarial plasmodia grown in vitro only when the parasites escape from red cells. By removing leucocytes, successive generations of both species may be had by adding fresh red cells and serum at proper intervals. The generation period varies greatly with temperature and probably with other conditions.

PURE CULTURES OF SPIROCHAETA IN VITRO

Noguchi (Jour. Exp. Med. Aug. 1912) describes the pure cultivation of several species of Spirochaeta and *Treponema pallida* in vitro. The conditions are: a temperature of about 37°C.; fresh sterile tissue, and a body fluid capable of forming a loose fibrin with the tissue; and some oxygen.

The germs do not lose wholly their pathogenic quality by such cultivation, tho the virulence seems diminished.

Both longitudinal and transverse division of these organisms is affirmed by the writer.

NOTES ON POLLEN

Lord Avebury gives (Jour. R. M. S., Oct. 1912) in popular form many facts relating to pollen,—its structure, development, variations in size, form and surface, colors, etc. He includes a table giving length of the pollen grain and length of pistil. He concludes that there is a distinct relation between these, especially convincing when nearly related species are compared. The article concludes with a summary of the family traits of the pollen of the various natural orders of plants.

ROOT NODULES IN PLANTS OTHER THAN THE LEGUMINOSÆ

Since the discovery that atmospheric nitrogen is assimilated by leguminous plants thru the action of symbiotic bacteria in the nodules of the roots, it has been an open question as to how widely this relationship and this power extend in the plant kingdom. In the investigation of this question it has been found that root nodules exist in Cycadaceæ, Elæaginaceæ, in *Alnus*, *Podocarpus*, and *Myrica*.